



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

October 27, 2020

MEMORANDUM

Subject: Review of AWP A E11-06/E11-12 Wood Leaching Study for Tebuconazole

PC Code: 128997	DP Barcode: D455171
Decision No. 557266	Registration No.: N/A (for registration review)
Petition No.: N/A	Regulatory Action: Review of wood leaching study for Tebuconazole
Risk Assess Type: None	Case No.: N/A
TXR No.: N/A	CAS No.: 107534-96-3 (tebuconazole), 1317-38-0 (cuprous oxide)
MRID Nos.: 48901607	40 CFR: N/A

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Thru: Melissa Panger, Ph.D., Branch Chief
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To: Kevin Costello, Risk Manager 52
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Pesticide Reevaluation Division (7508P)

INTRODUCTION:

The AWP A E11-06 study for tebuconazole (MRIDs 48901607) is being reviewed as part of the Registration Review process in the Antimicrobials Division. This study provides only supplemental data because the results of individual sampling intervals up to 14 days were not provided. However, it does satisfy the AWP A E11-12 data requirement because average daily leaching rates for copper and tebuconazole may be calculated.

The Data Evaluation Record (DER) for this study is attached.

Data Evaluation Record


STANDARD METHOD OF DETERMINING THE LEACHABILITY OF WOOD PRESERVATIVES (E11-06/E11-12)


Report: Muchow, T. (2012) AWP A E11 Leachability Testing. Project Number: OSMOSE/2012/21, 10/0504. Unpublished study prepared by Timber Products Inspection. 9p. MRID 48901607

Guideline: AWP A E11-06/E11-12

Classification: The Muchow (2012) study for Standard Method of Determining the Leachability of Wood Preservatives provides supplemental data and satisfies the AWP A E11-06/E11-12 data requirement for tebuconazole. Data from individual sampling intervals prior to 14 days (study termination) were not presented in the study.

PC Code: 128997 (tebuconazole) and 025601 (cuprous oxide)

From: James Breithaupt, Agronomist 
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Thru: Siroos Mostaghimi, Senior Scientist 
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EXECUTIVE SUMMARY

The registrant submitted a wood leaching study to satisfy the AWP A E11-06/E11-12 data requirement for tebuconazole. The study (MRID 48901607) only provides supplemental data because the sampling intervals prior to 14 days (end of test) were not reported. However, the study provides the cumulative leach rates of both copper and tebuconazole which can be converted to an average daily leaching rate.

I. MATERIALS AND METHODS

Guideline followed: AWP A E11-06/E11-12

GLP Compliance: This study does not contain laboratory work subject to EPA Good Laboratory Practice Standards 40 CFR Part 160.

A. Materials:

1. **Test Material:** (RS)-1-p-chlorophenyl-4,4-dimethyl-3-(1H-1,2,4-triazol-1-ylmethyl)pentan-3-ol (unknown purity)

2. **Methods:**

Southern Yellow Pine cubes (19 mm) were treated at 0.15 % w/w with three different formulations of wood preservative containing both copper (1440-1850 ppm) and tebuconazole (65-86 ppm). Cubes were also treated at 0.375 % w/w with three formulations of wood preservative containing both copper (4390-4710 ppm) and tebuconazole (162-167 ppm). Six cubes were used for each treatment and these cubes were submerged in 300 ml tap water for 14 days. Water sampling and changes were conducted at unknown intervals and only the 14-day cumulative values were reported. The test was also conducted using the AWP A CA-C standard for copper and tebuconazole¹. Chemical analysis of the copper was conducted using the AWP A A21-00 standard method, and for tebuconazole, chemical analysis was conducted using the AWP A A31-06 standard method.

II. RESULTS AND DISCUSSION

In this study, the only available study results were for cumulative leaching of copper and tebuconazole because data on early sampling intervals were not provided. For copper, the cumulative leaching was 33 $\mu\text{g}/\text{cm}^2$ for the 0.15 % treatment rate and 83 $\mu\text{g}/\text{cm}^2$ for the 0.375 % treatment rate. These cumulative leaching estimates are above the estimates for the standard CA-C wood with cumulative leaching of 28-33 $\mu\text{g}/\text{cm}^2$ at the same treatment rates. Based on the cumulative leaching, leaching rates were calculated. The leaching rates for copper were 2.4 $\mu\text{g}/\text{cm}^2/\text{day}$ for 0.15 % and 5.9 $\mu\text{g}/\text{cm}^2/\text{day}$ for 0.375, both of which were higher than the CA-C standard values of 2.0-3.9 $\mu\text{g}/\text{cm}^2/\text{day}$ (Table 1).

For tebuconazole, the cumulative leaching was 1.3 $\mu\text{g}/\text{cm}^2$ at the 0.15 % treatment rate and 3.4 $\mu\text{g}/\text{cm}^2$ for the 0.375 % treatment rate. No leaching (-0.71 $\mu\text{g}/\text{cm}^2$) was reported for the 0.15 % CA-C standard treatment but the cumulative leaching for the 0.375 % treatment (3.4 $\mu\text{g}/\text{cm}^2$) was higher than the CA-C standard of 1.4 $\mu\text{g}/\text{cm}^2$. Based on the cumulative leaching, leaching rates were calculated, and were 0.09 $\mu\text{g}/\text{cm}^2/\text{day}$ for 0.15 % and 0.25 $\mu\text{g}/\text{cm}^2/\text{day}$ for 0.375 %. No leaching (-0.05 $\mu\text{g}/\text{cm}^2/\text{day}$) was reported for the 0.15 % standard CA-C treatment, but the leaching rate for the 0.375 % treatment was higher than the standard CA-C treatment was lower (0.1 $\mu\text{g}/\text{cm}^2/\text{day}$) (Table 2).

The daily percentages of copper and tebuconazole were not provided in the study, but the overall percent leaching values over 14 days were provided in Table 2 of the study. In the test samples, total copper leaching over 14 days ranged from 0.1-0.3 % (Table 1) and total tebuconazole leaching ranged from 1.8-4.6 % (Table 2). In the standard CA-C samples, copper leaching over 14 days ranged from 0.2-0.4 % and tebuconazole ranged from 2.8-6.9 %. For both compounds, percent leaching decreased with increasing treatment rate, as expected.

Table 1. Leaching Statistics for Copper.

Wood Treatment Rate (pcf)	Average Leaching Rate ($\mu\text{g}/\text{cm}^2/\text{day}$)	Cumulative Leaching ($\mu\text{g}/\text{cm}^2$)	Percent leached
0.15	2.4	33	0.2-0.3
0.375	5.9	83	0.1-0.2
0.15 (AWPA CA-C standard CCAC)	2.0	28	0.2
0.375 (AWP A	3.9	33	0.4

¹ <https://awpa.com/images/standards/U1excerpt.pdf>

CA-C standard CCAC)			
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Table 2. Leaching Statistics for Tebuconazole.

Wood Treatment Rate (pcf)	Average Leaching Rate ($\mu\text{g}/\text{cm}^2/\text{day}$)	Cumulative Leaching ($\mu\text{g}/\text{cm}^2$)	Percent leached
0.15	0.09	1.3	3.4-4.6
0.375	0.25	3.4	1.8-4.4
0.15 (AWPA CA-C standard CCAC)	No data	No data	6.8
0.375 (AWPA CA-C standard) ²	0.1	1.4	2.9

III. REFERENCES

American Wood Protection Association (AWPA). 2011. Standard Method of Determining the Leachability of Wood Preservatives. AWPA E11-06.

² <https://awpa.com/images/standards/U1excerpt.pdf>